

COMPARATIVE ANALYSIS

**RULE 69.3.1 (STATIONARY GAS TURBINE ENGINES -
BEST AVAILABLE RETROFIT CONTROL TECHNOLOGY)**

STATUTORY REQUIREMENTS

Prior to adopting, amending, or repealing a rule or regulation, California Health and Safety Code Section 40727 requires findings of necessity, authority, clarity, consistency, non-duplication, and reference. As part of the consistency finding to ensure proposed rule requirements do not conflict with or contradict other Air Pollution Control District (District) or federal regulations, Health and Safety Code Section 40727.2(a) requires the District to perform a written analysis identifying and comparing the air pollution control standards and other provisions of proposed amended Rule 69.3.1 with existing or proposed District rules and guidelines and existing federal rules, requirements, and guidelines applying to the same source category.

ANALYSIS

Currently, stationary turbine engines are regulated by existing District Rule 69.3.1 reflecting State Best Available Retrofit Control Technology (BARCT) requirements and existing District Rule 69.3 reflecting federal Reasonably Available Control Technology (RACT) requirements. Proposed amended Rule 69.3.1 satisfies BARCT requirements of the Health and Safety Code and also implements every feasible measure for peaking turbines installed before 1998 and rated at more than four megawatts (MW).

CONCLUSION

A comparative analysis between proposed amended Rule 69.3.1 and existing Rule 69.3 - Stationary Gas Turbine Engines, federal New Source Performance Standards (NSPS) Subpart GG - Stationary Gas Turbines, federal NSPS Subpart KKKK, and the District's most recent Best Available Control Technology (BACT) determinations for stationary gas turbines was conducted regarding applicability, exemptions, emission limits, monitoring, and recordkeeping requirements. The analysis shows amended Rule 69.3.1 and existing Rule 69.3 have many similarities including format, turbine size applicability, several exemptions, and monitoring and record keeping requirements (Table 1). Rule 69.3.1 has more stringent emission limitations than Amended Rule 69.3 and, because it is more stringent, has some special exemptions. Amended Rule 69.3.1 is more stringent than NSPS Subpart GG in all areas except test methods where the requirements are the same (Table 2). Amended Rule 69.3.1 is more stringent than NSPS Subpart KKKK in all areas except test methods where the requirements are the same (Table 3). Amended Rule 69.3.1 is less stringent than BACT for gas turbines in all areas except test methods where the requirements are the same (Tables 4 and 5). There are no conflicting requirements between new Rule 69.3.1 and amended Rule 69.3, NSPS Subpart GG, NSPS Subpart KKKK, or BACT for gas turbine engines.

**TABLE 1: PROPOSED AMENDED RULE 69.3.1 COMPARISON TO
RULE 69.3 - STATIONARY GAS TURBINE ENGINES
REASONABLY AVAILABLE CONTROL TECHNOLOGY**

ELEMENTS	PROPOSED AMENDED RULE 69.3.1			EXISTING RULE 69.3		
APPLICABILITY	Existing units rated ≥ 1.0 MW and new units rated ≥ 0.3 MW.			Units ≥ 0.3 MW except units ≥ 1 MW installed before September 27, 1994.		
EXEMPTIONS FROM RULE	Units operated for research and development.			Same as proposed amended Rule 69.3.1.		
	Portable units located at a stationary source for ≤ 12 consecutive months.			Same as proposed amended Rule 69.3.1.		
	New units rated ≤ 0.4 MW and used in conjunction with military equipment, and operated at military sites, provided operation is for < 1000 hours/year.			Same as proposed amended Rule 69.3.1.		
EXEMPTIONS FROM EMISSION STANDARDS	Emergency units operating < 80 hours/year for non-emergency purposes.			Same as proposed amended Rule 69.3.1.		
	Except for combined cycle turbines during extended startups, any unit for a period ≤ 120 minutes during startup, shutdown, or fuel change.			Any unit for a period ≤ 120 minutes during startup, shutdown, or fuel change.		
	For combined-cycle turbines a period ≤ 360 minutes during extended startups if determined necessary by the District based on key operational parameters.			N/A		
	For turbines with lean premix combustors, periods of low-load operation ≤ 130 minutes a day and ≤ 780 minutes per year.			N/A		
	Peaking units subject to daily mass emission limit are exempt on days with potential electrical power shortages and also on days with natural gas fuel curtailments			N/A		
STANDARDS	NOx Emission Concentration Limits (Corrected to 15% O ₂):			NOx Emission Concentration Limits (Corrected to 15% O ₂):		
	<u>Power Output Rating</u> (MW)	<u>Gaseous Fuel</u> (ppmv)	<u>Liquid Fuel</u> (ppmv)	<u>Power Output Rating</u> (MW)	<u>Gaseous Fuel</u> (ppmv)	<u>Liquid Fuel</u> (ppmv)
	≥ 0.3 and < 2.9 (new units)	42	65	≥ 0.3 and < 2.9 (new units)	42	65
	≥ 1.0 and < 2.9 (existing units)	42	65	≥ 1.0 and < 2.9 (existing units)	42	65
	≥ 2.9 and < 10.0	25 [†]	65	≥ 2.9 and < 10.0	42	65
	≥ 10.0 without post - combustion NOx control	15 [†]	42 [†]	≥ 10.0 without post - combustion NOx control	42	65
	≥ 10.0 with post - combustion NOx control	9 [†]	25 [†]	≥ 10.0 with post - combustion NOx control	42	65
	EXCEPT AS FOLLOWS:					
	≥ 4 MW peaking units < 877 hour/year	42	65	≥ 4 MW peaking units < 877 hour/year	42	65
	< 4 MW and operating < 877 hour/year	42	65	< 4 MW and operating < 877 hour/year	42	65
	≥ 4 MW peaking units < 877 hour/year	Comply with daily NOx mass emission limit on days with forecast high ozone levels and use only natural gas on those days.		N/A		

**TABLE 1 CONTINUED: PROPOSED AMENDED RULE 69.3.1 COMPARISON TO
RULE 69.3 - STATIONARY GAS TURBINE ENGINES
REASONABLY AVAILABLE CONTROL TECHNOLOGY**

MONITORING AND RECORDKEEPING REQUIREMENTS	Units shall have continuous monitors to demonstrate continuous compliance of applicable operational characteristics.	Same as proposed amended Rule 69.3.1.
	All CEMS shall comply with applicable federal requirements.	Same as proposed amended Rule 69.3.1.
	CEMS is required for units rated ≥ 10 MW that operate for > 4000 hour/year.	N/A
	Records of operational parameters necessary to demonstrate compliance.	Same as proposed amended Rule 69.3.1
	If applicable, dates and times of operation and times of all startups, shutdowns, low-load operations, and fuel changes.	Dates and times of operation and times and durations of all startups, shutdowns, and fuel changes.
	For emergency units, hours of operation for nonemergency purposes.	Same as proposed amended Rule 69.3.1 except for minor clarifications.
	Records of all source tests.	N/A
	Records to be maintained on premises except for unmanned sites may be maintained at an alternative location if approved by the District.	Records to be maintained on premises.
	For peaking units, annual hours of operation.	N/A
	If applicable, records of type and quantity fuel used each day and each calendar year.	Records of type and quantity fuel used.
	For peaking units subject to daily mass emission cap, records of daily NO _x mass emissions or an alternative operating parameter as approved by the District.	N/A
	Required records shall be maintained for at least 2 years.	Same as proposed amended Rule 69.3.1.
TEST METHODS	District Source Test Method 100 as approved by the EPA and EPA Method 7E if subject to federal acid rain program.	District Source Test Method 100 as approved by the EPA.
SOURCE TEST REQUIREMENTS AND COMPLIANCE DETERMINATION	The averaging period to calculate NO _x emissions concentration shall be 1-clock hour for CEMS and 3 subtests for source tests.	Same as proposed amended Rule 69.3.1.
	Source testing shall be performed at no less than 80% of the power rating, unless otherwise approved by the District.	Same as proposed amended Rule 69.3.1.
	Annual source testing is required except units subject to federal acid rain program tested in accordance with that program.	Annual source testing is required unless otherwise directed by the District.
	Test reports shall include appropriate operational characteristics of the unit and of all add-on NO _x control systems.	Same as proposed amended Rule 69.3.1.
COMPLIANCE SCHEDULE	New units shall comply with the applicable provisions of this rule upon initial installation and operation.	Same as proposed amended Rule 69.3.1.
	Intermediate Daily emission limit is applicable January 1, 2012. Final limit is applicable January 1, 2014.	N/A

† The NO_x concentration limit shall not be lower than the value reported in this table. However, depending upon the rated turbine thermal efficiency of a particular gas turbine, the actual NO_x limit may be as much as 30% higher than the value reported in this table

**TABLE 2: PROPOSED AMENDED RULE 69.3.1 COMPARISON TO
NSPS SUBPART GG - STANDARDS OF PERFORMANCE
FOR STATIONARY GAS TURBINE ENGINES**

ELEMENTS	PROPOSED AMENDED RULE 69.3.1	Subpart GG				
APPLICABILITY	Existing units rated ≥ 1.0 MW and new units rated ≥ 0.3 MW.	Units with peak heat input load ≥ 10 million Btu/hour (approximately equivalent to a turbine output rating ≥ 1.0 MW [‡]).				
EXEMPTIONS FROM RULE	Units operated for research and development.	Same as proposed amended Rule 69.3.1, except for minor differences for clarity.				
	Portable units located at a stationary source for ≤ 12 consecutive months.	Same as proposed amended Rule 69.3.1, except for minor differences for clarity.				
	New units rated ≤ 0.4 MW and used in conjunction with military equipment, and operated at military sites, provided operation is for < 1000 hours/year.	Same as proposed amended Rule 69.3.1 except for minor differences for clarity, and excluding the provision that the unit operate at military sites and operate < 1000 hours/year.				
EXEMPTIONS FROM EMISSION STANDARDS	Emergency units operating < 80 hours/year for non-emergency purposes.	Same as proposed amended Rule 69.3.1, excluding the provision that the unit operate for < 80 hour/year for non-emergency purposes, and except for minor differences for clarity.				
	Except for combined cycle turbines during extended startups, any unit for a period ≤ 120 minutes during startup, shutdown, or fuel change.	NSPS general provisions require operators to minimize emissions during these periods. Subpart GG requires reporting of excess emissions during these periods.				
	For combined-cycle turbines a period ≤ 360 minutes during extended startups if determined necessary by the District based on key operational parameters.	NSPS general provisions require operators to minimize emissions during these periods. Subpart GG requires reporting of excess emissions during these periods.				
	For turbines with lean premix combustors, periods of low-load operation ≤ 130 minutes a day and ≤ 780 minutes per year.	NSPS general provisions require operators to minimize emissions during these periods. Subpart GG requires reporting of excess emissions during these periods.				
	Peaking units subject to daily mass emission limit are exempt on days with potential electrical power shortages and also on days with natural gas fuel curtailments.	N/A				
	N/A	Military gas turbines.				
	N/A	Regenerative cycle gas turbines with a heat input of ≤ 100 million Btu/hour.				
	N/A	Stationary gas turbines with a heat input rating ≥ 10 million Btu/hour when fired on gaseous fuel, when fired with an emergency fuel.				
	N/A	Stationary gas turbines ≥ 10 million Btu/hour and ≤ 100 million Btu/hour with construction commenced prior to 10/3/82.				
	N/A	Applicable stationary gas turbines ≥ 100 million Btu/hour that commenced construction, modification, or reconstruction between the dates of 10/3/77 and 1/27/82, except electric utility turbines.				
	Other exemptions not generally applicable to San Diego County.					
STANDARDS	NOx Emission Concentration Limits (Corrected to 15% O2):					
	<u>Power Output Rating</u> (MW)	<u>Gaseous Fuel</u> (ppmv)	<u>Liquid Fuel</u> (ppmv)	<u>Power Output Rating[‡]</u> (MW)	<u>Gaseous Fuel</u> (ppmv)	<u>Liquid Fuel</u> (ppmv)
	≥ 0.3 and < 2.9 (new units)	42	65	≥ 1.0 and < 10.0	75 (150) [§]	75 (150) [§]
	≥ 1.0 and < 2.9 (existing units)	42	65			
	≥ 2.9 and < 10.0	25 [†]	65			

**TABLE 2: PROPOSED AMENDED RULE 69.3.1 COMPARISON TO
NSPS SUBPART GG - STANDARDS OF PERFORMANCE
FOR STATIONARY GAS TURBINE ENGINES**

	≥ 10.0 without post - combustion NOx control		15 [†]	42 [‡]	≥ 10.0	75 (150) [§]	75 (150) [§]
	≥ 10.0 with post - combustion NOx control		9 [†]	25 [‡]			
	EXCEPT AS FOLLOWS:						
	≥ 4 MW peaking units < 877 hour/year		42	65	N/A		
	< 4 MW and operating < 877 hour/year		42	65	N/A		
	≥ 4 MW peaking units < 877 hour/year		Comply with daily NOx mass emission limit on days with forecast high ozone levels and use only natural gas on those days.		N/A		
MONITORING AND RECORDKEEPING REQUIREMENTS	Units shall have continuous monitors to demonstrate continuous compliance of applicable operational characteristics.				Same as proposed amended Rule 69.3.1.		
	All CEMS shall comply with applicable federal requirements.				Same as proposed amended Rule 69.3.1.		
	CEMS is required for units rated ≥ 10 MW that operate for > 4000 hour/year.				N/A		
	Records of operational parameters necessary to demonstrate compliance.				Same as proposed amended Rule 69.3.1.		
	Other records.				N/A		
	Required records shall be maintained for at least 2 years.				Same as proposed amended Rule 69.3.1.		
TEST METHODS	District Source Test Method 100 as approved by the EPA and EPA Method 7E if subject to federal acid rain program.				District Source Test Method 100 as approved by the EPA.		
SOURCE TEST REQUIREMENTS AND COMPLIANCE DETERMINATION	The averaging period to calculate NOx emissions concentration shall be 1-clock hour for CEMS and 3 subtests for source tests.				Rolling 4-hour period for CEMS and 3 subtests for source tests.		
	Source testing shall be performed at no less than 80% of the power rating, unless otherwise approved by the District.				Source test must be performed within ±5 percent at 30, 50, 75, and 90–100 percent of peak load or at four evenly-spaced load points in the normal operating range of the gas turbine, including 90–100 percent of peak load, or at the highest achievable load if 90–100 percent of peak load cannot be physically achieved in practice.		
	Annual source testing is required except units subject to federal acid rain program tested in accordance with that program.				One-time initial source test required.		
	Test reports shall include appropriate operational characteristics of the unit and of all add-on NOx control systems.				Same as proposed amended Rule 69.3.1.		
COMPLIANCE SCHEDULE	New units shall comply with the applicable provisions of this rule upon initial installation and operation.				Same as proposed amended Rule 69.3.1.		
	Intermediate Daily emission limit is applicable January 1, 2012. Final limit is applicable January 1, 2014,				N/A		

[†] The NOx concentration limit shall not be lower than the value reported in this table. However, depending upon the rated turbine thermal efficiency of a particular gas turbine, the actual NOx limit may be as much as 30% higher than the value reported in this table.

^{*} The NOx concentration limit shall not be lower than the value reported in this table. However, depending upon the rated heat rate of a particular gas turbine and the percentage of fuel-bound nitrogen in the fuel, the actual NOx limit may be as much as 30% higher than the value reported in this table.

[‡] The MW values listed in the table are based on 10,000 Btu/kW-hr, Subpart GG categorizes units by heat input (in terms of MMBtu/hr), so the applicability of the standards in terms of MW depends on the efficiency of the turbine.

[§] The value in parentheses reflects the limits for nonelectric utility turbines or that some turbines in this MW size range might have this less stringent standard.

**TABLE 3: PROPOSED AMENDED RULE 69.3.1 COMPARISON TO
NSPS SUBPART KKKK - STANDARDS OF PERFORMANCE
FOR STATIONARY GAS TURBINE ENGINES**

ELEMENTS	PROPOSED AMENDED RULE 69.3.1	SUBPART KKKK
APPLICABILITY	Existing units rated ≥ 1.0 MW and new units rated ≥ 0.3 MW.	Units with peak heat input load ≥ 1.0 million Btu/hour (approximately equivalent to a turbine output rating ≥ 1.0 MW) which commenced construction, modification, or reconstruction after Feb. 18, 2005.
EXEMPTIONS FROM RULE	Units operated for research and development.	N/A
	Portable units located at a stationary source for ≤ 12 consecutive months.	N/A
	New units rated ≤ 0.4 MW and used in conjunction with military equipment, and operated at military sites, provided operation is for < 1000 hours/year.	N/A
	N/A	Units at integrated gasification combined cycle electricity utility steam generating units that are subject to Subpart Da.
	N/A	Combustion turbine test cells/stands
EXEMPTIONS FROM EMISSION STANDARDS	Emergency units operating < 80 hours/year for non-emergency purposes.	Same as proposed amended Rule 69.3.1, excluding the provision that the unit operate for < 80 hour/year for non-emergency purposes, and except for minor differences for clarity.
	Except for combined cycle turbines during extended startups, any unit for a period ≤ 120 minutes during startup, shutdown, or fuel change.	Less stringent emission standard during operations at $< 75\%$ load, typical of startups.
	For combined-cycle turbines a period ≤ 360 minutes during extended startups if determined necessary by the District based on key operational parameters.	Less stringent emission standard during operations at $< 75\%$ load, typical of startups.
	For turbines with lean premix combustors, periods of low-load operation ≤ 130 minutes a day and ≤ 780 minutes per year.	Less stringent emission standard during operations at $< 75\%$ load.
	Peaking units subject to daily mass emission limit are exempt on days with potential electrical power shortages and also on days with natural gas fuel curtailments.	N/A
	N/A	Units operated for research and development on a case-by-case basis.
STANDARDS	NO _x Emission Concentration Limits (Corrected to 15% O ₂): <div> <u>Power Output Rating</u> (MW) <u>Gaseous Fuel</u> (ppmv) <u>Liquid Fuel</u> (ppmv) </div>	NO _x Emission Concentration Limits [#] (Corrected to 15% O ₂): <div> <u>Power Output Rating*</u> (MW) <u>Natural Gas Fuel</u> (ppmv)[‡] <u>Other Fuel</u> (ppmv)[‡] </div>
	≥ 0.3 and < 2.9 (new units) 42 65	≤ 5 (150) [§] 42 (100) [§] 96
	≥ 2.9 and < 10.0 25 [†] 65	> 5 and ≤ 85 25 74
	≥ 10.0 without post - combustion NO _x control 15 [†] 42 [†]	> 85 15 42
	≥ 10.0 with post - combustion NO _x control 9 [†] 25 [†]	
	N/A	$< 75\%$ peak load 96 96
	N/A	All sizes (heat recovery units) 54 54

**TABLE 3: PROPOSED AMENDED RULE 69.3.1 COMPARISON TO
NSPS SUBPART KKKK - STANDARDS OF PERFORMANCE
FOR STATIONARY GAS TURBINE ENGINES**

	EXCEPT AS FOLLOWS:		
	≥ 4 MW peaking units < 877 hour/year	42 65	N/A
	< 4 MW and operating < 877 hour/year	42 65	N/A
	≥ 4 MW peaking units < 877 hour/year	Comply with daily NO _x mass emission limit on days with forecast high ozone levels and use only natural gas on those days.	N/A
MONITORING AND RECORDKEEPING REQUIREMENTS	Units shall have continuous monitors to demonstrate continuous compliance of applicable operational characteristics.		For units using water or steam injection, same as proposed amended Rule 69.3.1.
	All CEMS shall comply with applicable federal requirements.		Same as proposed amended Rule 69.3.1.
	CEMS is required for units rated ≥ 10 MW that operate for > 4000 hour/year.		N/A
	Records of operational parameters necessary to demonstrate compliance.		Same as proposed amended Rule 69.3.1.
	Other records.		Submit reports of excess emissions and monitor downtime. Excess emissions must be reported for all periods of unit operation, including start-up, shutdown and malfunction.
	Required records shall be maintained for at least 2 years.		N/A
	N/A		Excess emissions during startups, shutdowns, and malfunctions must be reported.
TEST METHODS	District Source Test Method 100 as approved by the EPA and EPA Method 7E if subject to federal acid rain program.		EPA Method 7E or EPA Method 20
SOURCE TEST REQUIREMENTS AND COMPLIANCE DETERMINATION	The averaging period to calculate NO _x emissions concentration shall be 1-clock hour for CEMS and 3 subtests for source tests.		4-hour rolling average (simple cycle) and 30-day rolling average (combined cycle) for CEMS, and 3 subtests for source tests
	Source testing shall be performed at no less than 80% of the power rating, unless otherwise approved by the District.		Source test must be performed within ±25 percent of 100 percent of peak load, or at the highest achievable load if at least 75 percent of peak load cannot be physically achieved in practice.
	Annual source testing is required except units subject to federal acid rain program tested in accordance with that program.		One-time initial source test required. Annual source testing is required for units that don't use water or steam injection.
	Test reports shall include appropriate operational characteristics of the unit and of all add-on NO _x control systems.		Submit written report of results of source test before the close of business on the 60 th day following the source test.
COMPLIANCE SCHEDULE	New units shall comply with the applicable provisions of this rule upon initial installation and operation.		Same as proposed amended Rule 69.3.1.
	Intermediate Daily emission limit is applicable January 1, 2012. Final limit is applicable January 1, 2014,		N/A

† The NO_x concentration limit shall not be lower than the value reported in this table. However, depending upon the rated turbine thermal efficiency of a particular gas turbine, the actual NO_x limit may be as much as 30% higher than the value reported in this table.

* The MW values listed in the table are based on 10,000 Btu/kW-hr; Subpart KKKK categorizes units by heat input (in terms of MMBtu) so the applicability of the standards in terms of MW depends on the efficiency of the turbine.

‡ Subpart KKKK allows compliance with alternate limits in terms of lb/MMBtu as well as compliance with the concentration standard. These limits are approximately equivalent to the concentration limits for new turbines during normal operations.

§ The value in parentheses reflects the value for nonelectric utility turbines. Modified turbines less than 85 MW also have these less stringent standards.

For turbines with multiple applicable standards (for example operating at less than 75% load) the standard in any averaging period is a weighted standard based on the amount of time each standard is applicable.

**TABLE 4: PROPOSED AMENDED RULE 69.3.1 COMPARISON TO A RECENT
BEST AVAILABLE CONTROL TECHNOLOGY (BACT) DETERMINATION FOR A SIMPLE-CYCLE
TURBINE**

ELEMENTS	PROPOSED AMENDED RULE 69.3.1	RECENT BACT DETERMINATION
APPLICABILITY	Existing units rated ≥ 1.0 MW and new units rated ≥ 0.3 MW.	One natural-gas-fired GE LM 6000PC gas turbine engine rated at 49.9 MW (368 MM Btu/hour) with water injection, selective catalytic reduction (SCR) and with a continuous emissions monitoring system (CEMS).
EXEMPTIONS FROM EMISSION STANDARDS	Any unit for a period ≤ 120 minutes during startup, shutdown, or fuel change except for combined-cycle turbine startups.	Startup ≤ 30 minutes, or for a period ≤ 15 minutes prior to a shut down.
	For lean premix combustion ≤ 130 minutes per day and ≤ 780 minutes per year for low-load operation.	No exemption for low-load operation
STANDARDS	NOx Emission Concentration Limits (Corrected to 15% O ₂): <div> <div>Power Output Rating (MW)</div> <div>Gaseous (ppmv)</div> </div>	NOx Emission Concentration Limits (Corrected to 15% O ₂): <div> <div>Power Output Rating (MW)</div> <div>Gaseous Fuel (ppmv)</div> </div>
	≥ 10.0 with post-combustion NOx control	49.9 2.5
MONITORING AND RECORDKEEPING REQUIREMENTS	Units shall have continuous monitors to demonstrate continuous compliance of applicable operational characteristics.	Same as proposed amended Rule 69.3.1.
	All CEMS shall comply with applicable federal requirements including applicable sections of 40 CFR 60. CEMS is required for units rated ≥ 10 MW that operate for > 4000 hour/year.	Same as proposed amended Rule 69.3.1., except for minor differences for clarity. <i>(This unit is rated ≥ 10 MW and is permitted to operate > 4000 hour/year.)</i>
	Annual source testing is required or testing in accordance with federal acid rain program frequency (40 CFR Part 75) for units subject to federal acid rain program.	Same as proposed amended Rule 69.3.1. This unit is subject to 40 CFR Part 75.
	Required records shall be maintained for at least 2 years.	Required records shall be maintained for at least 5 yrs.
TEST METHODS	District Source Test Method 100 as approved by the EPA and EPA Method 7E if subject to federal acid rain program.	Same as proposed amended Rule 69.3.1.

† The NOx concentration limit shall not be lower than the value reported in this table. However, depending upon the rated turbine thermal efficiency of a particular gas turbine, the actual NOx limit may be as much as 30% higher than the value reported in this table.

**TABLE 5: PROPOSED AMENDED RULE 69.3.1 COMPARISON TO A RECENT
BEST AVAILABLE CONTROL TECHNOLOGY (BACT) DETERMINATION FOR A COMBINED
CYCLE TURBINE**

ELEMENTS	PROPOSED AMENDED RULE 69.3.1	RECENT BACT DETERMINATION								
APPLICABILITY	Existing units rated ≥ 1.0 MW and new units rated ≥ 0.3 MW.	One nominal 165 MW natural-gas fired combined-cycle GE Frame 7FA gas turbine generator with lean premix combustors, a heat recovery steam generator, a 195 MMBtu/hr (HHV) auxiliary duct burner, a selective catalytic reduction unit (SCR), an oxidation catalyst, and a steam turbine generator shared with a second 165 MW combined-cycle turbine.								
EXEMPTIONS FROM EMISSION STANDARDS	Startup period ≤ 120 minutes during except for combined-cycle turbine extended (cold) startup.	Startup ≤ 120 minutes if steam reheat bowl temperature is < 500 °F.								
	Shutdown or fuel change ≤ 120 minutes.	Shutdown ≤ 65 minutes.								
	For combined-cycle startup, ≤ 360 minutes where key parameters indicate more time is necessary.	Startup ≤ 360 minutes if steam reheat bowl temperature is ≤ 500 °F.								
	For lean premix combustion, ≤ 130 minutes per day and ≤ 780 minutes per year for low-load operation.	Same as proposed amended Rule 69.3.1.								
	N/A	Comply with Rule 69.3.1 during tuning and load ramp rate > 50 MW per minute.								
STANDARDS	NOx Emission Concentration Limits (Corrected to 15% O ₂):	NOx Emission Concentration Limits (Corrected to 15% O ₂):								
	<table><tr><td><u>Power Output Rating</u> (MW)</td><td><u>Gaseous</u> (ppmv)</td></tr><tr><td>≥ 10.0 with post - combustion NOx control</td><td>9†</td></tr></table>	<u>Power Output Rating</u> (MW)	<u>Gaseous</u> (ppmv)	≥ 10.0 with post - combustion NOx control	9†	<table><tr><td><u>Power Output Rating</u> (MW)</td><td><u>GaseousFuel</u> (ppmv)</td></tr><tr><td>165</td><td>2.0</td></tr></table>	<u>Power Output Rating</u> (MW)	<u>GaseousFuel</u> (ppmv)	165	2.0
	<u>Power Output Rating</u> (MW)	<u>Gaseous</u> (ppmv)								
≥ 10.0 with post - combustion NOx control	9†									
<u>Power Output Rating</u> (MW)	<u>GaseousFuel</u> (ppmv)									
165	2.0									
MONITORING AND RECORDKEEPING REQUIREMENT	Units shall have continuous monitors to demonstrate continuous compliance of applicable operational characteristics.	Same as proposed amended Rule 69.3.1.								
	All CEMS shall comply with applicable federal requirements including applicable sections of 40 CFR 60. CEMS is required for units rated ≥ 10 MW that operate for > 4000 hour/year.	Same as proposed amended Rule 69.3.1, except for minor differences for clarity. <i>(This unit is rated ≥ 10 MW and is permitted to operate > 4000 hour/year.)</i>								
	Annual source testing is required or testing in accordance with federal acid rain program frequency (40 CFR Part 75) for units subject to federal acid rain program.	Same as proposed amended Rule 69.3.1. This is unit is subject to 40 CFR Part 75.								
	Required records shall be maintained for at least 2 years.	Required records shall be maintained for at least 5 yrs.								
TEST METHODS	District Source Test Method 100 as approved by the EPA and EPA Method 7E if subject to federal acid rain program.	Same as proposed amended Rule 69.3.1.								

[†] The NOx concentration limit shall not be lower than the value reported in this table. However, depending upon the rated turbine thermal efficiency of a particular gas turbine, the actual NOx limit may be as much as 30% higher than the value reported in this table.